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VSP HOMOLOGIES

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---------|--------------|----------|-------|--------|-------|-------|-------------|
| VSP-b | RSSEVVKCASFR | AYEARNIR | ARKY | EE | EOV | | |
| VSP-a | RTPEVVKCASWR | AYEARNIR | EC | EE | EE | EE | EV |
| T.phos | | LKCTTWR | FVVE | TNNL | SPWK | EE | EA |
| Ph.vulg | SDTEVRCASWR | AYEAQNIR | EE | EE | EE | EE | EV |
| Ar.VSP | | PNERSWH | EGFE | SNM | INE | EE | EV |
| Ar.1A-1 | SINYPNERSWH | EGFE | SNM | INE | EE | EE | EV |
| Ar17A-1 | SINYPNERSWH | EGFE | SNM | INE | EE | EE | EV |
| | 31 | 35 | 40 | 45 | 50 | 55 | |
| VSP-b | EPYKEY | | INGE | FRSE | SKTYN | DAFF | YASE |
| VSP-a | EATKEY | | INGE | FRSE | SKTYN | DAFF | YARD |
| T.phos | DYVKEY | | MVE | PGYKME | IDRV | SDE | AGEYAKS |
| Ph.vulg | DATANY | | IEGG | YRSD | SKTYN | QGI | YEFARD |
| Ar.VSP | AYVEDY | IT | SKOY | YDS | SKTYN | KEAYE | YAKS |
| Ar.1A-1 | AYVEDY | IT | SKOY | YDS | SKTYN | KEAYE | YAKS |
| Ar17A-1 | DYVEDY | IT | SKOY | YDS | SKTYN | KEAYE | YAKS |
| | 60 | 65 | 70 | 75 | 80 | 85 | |
| VSP-b | REV | | HHNDI | FGI | DNVLS | NI | PYYEKK |
| VSP-a | REV | | HPKDT | FVFS | DNVLS | NI | PYYKK |
| T.phos | VDGDD | GR | DM | FE | DE | EL | SNLPYYSDMR |
| Ph.vulg | RHV | | HENDV | ILEN | DGTAL | SN | PYYSQMG |
| Ar.VSP | LALKND | I | NVW | FE | DE | EL | SNLPYYAKYG |
| Ar.1A-1 | LALKND | I | NVW | FE | DE | EL | SNLPYYAKYG |
| Ar17A-1 | LALKND | I | NVW | FE | DE | EL | SNLPYYAKYG |
| | 90 | 95 | 100 | 105 | 110 | 115 | |
| VSP-b | YGVEE | EFNET | LYDEW | NKGD | | APAL | PETLKN |
| VSP-a | YGVEE | EFNET | LYDEW | NKGN | | APAL | PETLKN |
| T.phos | YGLE | VFD | VEF | DKW | ENG | T | APALGSSLEKE |
| Ph.vulg | YGSEK | FDSE | RYDE | EFV | NKGE | APAL | PETLKN |
| Ar.VSP | YGTEN | AAGAY | WSW | VSCE | | TPGL | PETLHL |
| Ar.1A-1 | YGTEN | AAGAY | WSW | VSCE | | TPGL | PETLHL |
| Ar17A-1 | YGTEN | AAGAY | WSW | VSCE | | TPGL | PETLHL |

TO FIG. 1A.

FIG. 1.

FROM FIG. 1.

| | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|
| | 120 | 125 | 130 | 135 | 140 | 145 |
| VSP-b | Y | N | K | L | S | G |
| VSP-a | Y | N | K | L | S | G |
| T.phos | Y | Q | E | V | L | K |
| Ph.vulg | Y | N | K | L | S | G |
| Ar.VSP | Y | E | N | L | L | E |
| Ar.1A-1 | Y | E | N | L | L | E |
| Ar17A-1 | Y | E | N | L | L | E |
| | 150 | 155 | 160 | 165 | 170 | 175 |
| VSP-b | K | A | G | H | T | W |
| VSP-a | K | A | G | H | T | W |
| T.phos | N | A | G | F | H | D |
| Ph.vulg | K | A | G | H | T | W |
| Ar.VSP | A | V | G | V | K | W |
| Ar.1A-1 | A | V | G | V | K | W |
| Ar17A-1 | A | V | G | V | K | W |
| | 180 | 185 | 190 | 195 | 200 | 205 |
| VSP-b | R | E | N | L | R | A |
| VSP-a | R | E | N | L | R | A |
| T.phos | R | N | A | M | V | E |
| Ph.vulg | R | A | K | L | V | Q |
| Ar.VSP | R | N | S | L | V | R |
| Ar.1A-1 | R | N | S | L | V | R |
| Ar17A-1 | R | N | S | L | V | R |
| | 210 | 218 | | | | |
| VSP-b | R | T | | | | |
| VSP-a | R | T | | | | |
| T.phos | R | S | | | | |
| Ph.vulg | R | S | | | | |
| Ar.VSP | R | V | | | | |
| Ar.1A-1 | R | V | | | | |
| Ar17A-1 | R | V | | | | |

FIG. 1A.

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PROPOSED VSP β METHIONINE-ENRICHED VARIANTS

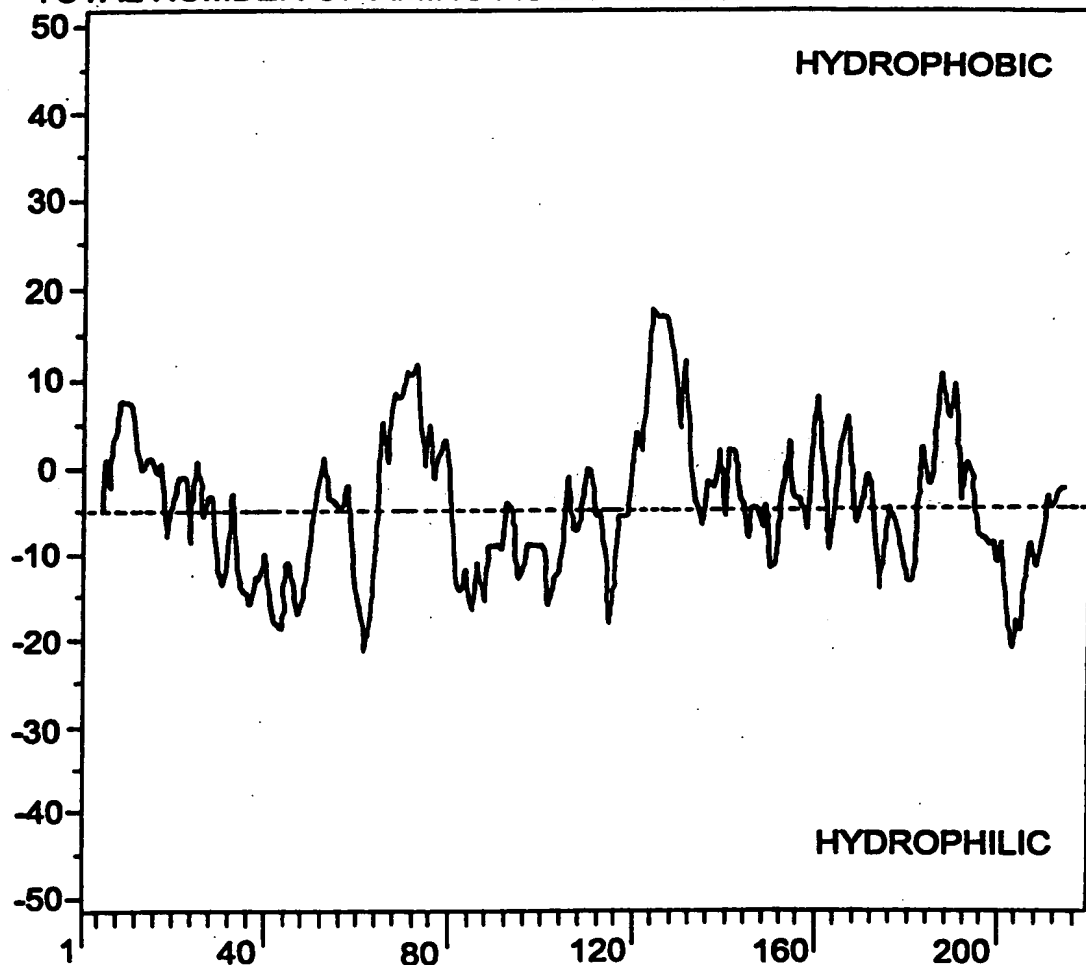
| | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|--------------------|---------|-------|--------|--------|---------|--------|--------|
| VSP β | RSSEIVK | CAS | FRLAVE | AHNI | IRAFKTI | PEEQV | |
| VSP β -Met10 | | M | | | M | | M |
| VSP β -Met20 | | M | | | M | | M |
| VSP β -Met30 | | M | | | M | M | M |
| | 31 | 35 | 40 | 45 | 50 | 55 | 60 |
| VSP β | EPTKDYI | INGEQ | FRS | DSKT | DNQQA | FFYAS | ER |
| VSP β -Met10 | | M | | M | | | M |
| VSP β -Met20 | M | M | | M | | | M |
| VSP β -Met30 | M | M | | M | M | | M |
| | 61 | 65 | 70 | 75 | 80 | 85 | 90 |
| VSP β | EVHHNDI | IFIFG | I | DNTVLS | NI | PYYEK | HGYGV |
| VSP β -Met10 | M | M | | M | | | |
| VSP β -Met20 | M | M | M | M | | | M |
| VSP β -Met30 | M | M | M | M | M | | M |
| | 91 | 95 | 100 | 105 | 110 | 115 | 120 |
| VSP β | EEFN | ETLY | DEWV | NKGD | APAL | PETL | KNYNKL |
| VSP β -Met10 | | | | | | | |
| VSP β -Met20 | | M | | M | | | |
| VSP β -Met30 | M | M | | M | | | |
| | 121 | 125 | 130 | 135 | 140 | 145 | 150 |
| VSP β | LSLGFKI | IVFL | SGRYL | DKMA | VTEAN | LKKAG | F |
| VSP β -Met10 | M | | M | | M | | M |
| VSP β -Met20 | M | | M | M | M | | M |
| VSP β -Met30 | M | | M | M | M | M | M |
| | 151 | 155 | 160 | 165 | 170 | 175 | 180 |
| VSP β | HTWEQL | I LK | DPHL | IIT | PNALS | SYKSAM | RENIL |
| VSP β -Met10 | | | | | | M | M |
| VSP β -Met20 | | | | M | M | M | M |
| VSP β -Met30 | | | M | MM | M | M | M |
| | 181 | 185 | 190 | 195 | 200 | 205 | 210 |
| VSP β | RQGYR | I VG | IIG | DQWS | DLLG | DHRGES | RTIFKL |
| VSP β -Met10 | | | M | | | M | |
| VSP β -Met20 | | | M | | M | M | M |
| VSP β -Met30 | | | M | | M | M | M |
| | 211 | 215 | 218 | | | | |
| VSP β | PNP | MY | YIE | | | | |
| VSP β -Met10 | | M | M | | | | |
| VSP β -Met20 | | M | M | | | | |
| VSP β -Met30 | | M | M | | | | |

FIG. 2.

Title: Compositions and Methods for Altering Amino Acid Content of
Proteins
Inventor(s): Rao *et al.*
Application N : 09/478,598
Atty Dkt N : 5718-16A (35718/193734)

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPB.
TOTAL NUMBER OF AMINO ACIDS IS: 218.



HYDROPATHIC INDEX OF VSPB FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-4.95).

FIG. 3A.

Title: Compositions and Methods for Altering Amino Acid Content of Proteins

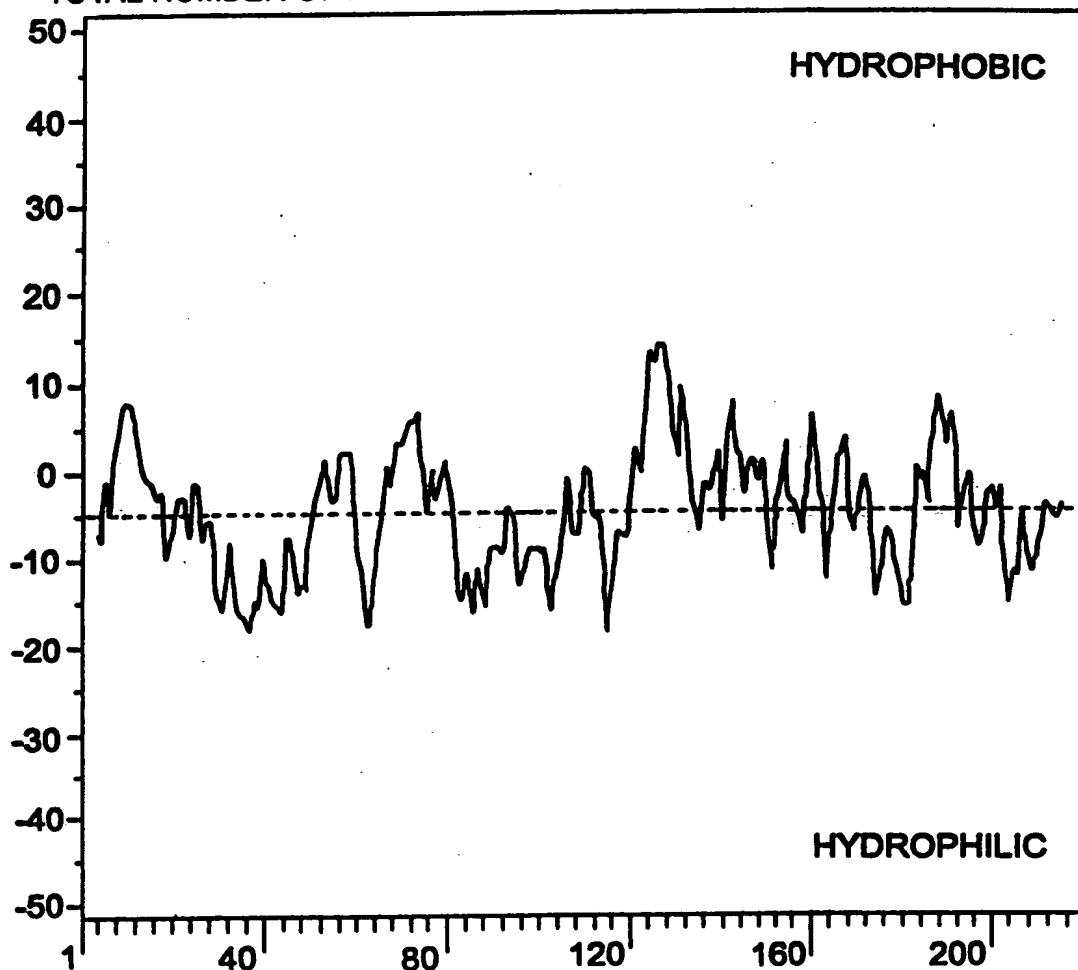
Inventor(s): Rao *et al.*

Application No: 09/478,598

Attorney Dkt No: 5718-16A (35718/193734)

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM10.
TOTAL NUMBER OF AMINO ACIDS IS: 218



HYDROPATHIC INDEX OF VSPM1 FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=5.52).

FIG. 3B.

Title: Compositions and Methods for Altering Amino Acid Content of Proteins

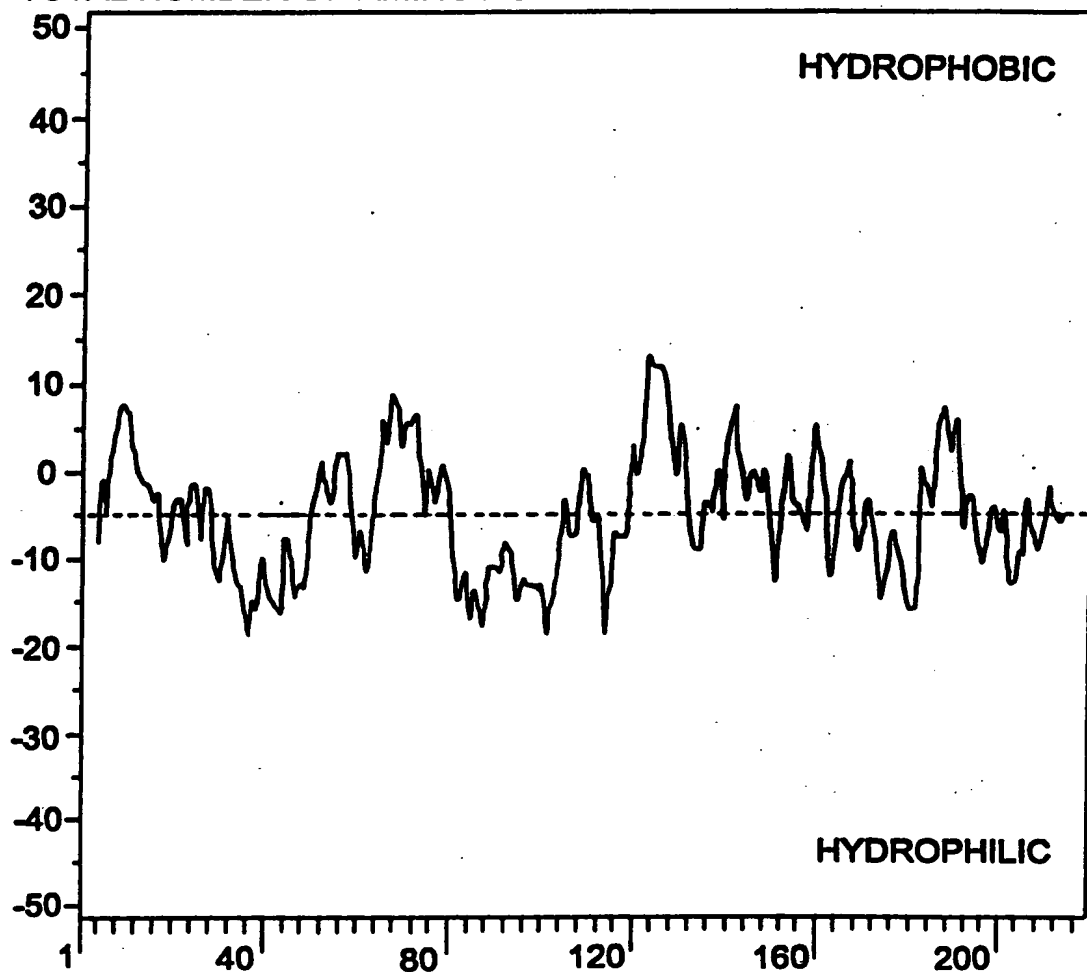
Inventor(s): Rao *et al.*

Application No: 09/478,598

Atty Dkt No: 5718-16A (35718/193734)

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM20.
TOTAL NUMBER OF AMINO ACIDS IS: 218.



HYDROPATHIC INDEX OF VSPM20 FROM AMINO ACID 1 AMINO ACID 210.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-5.68).

FIG. 3C.

Title: Compositions and Methods for Altering Amino Acid Content of Proteins

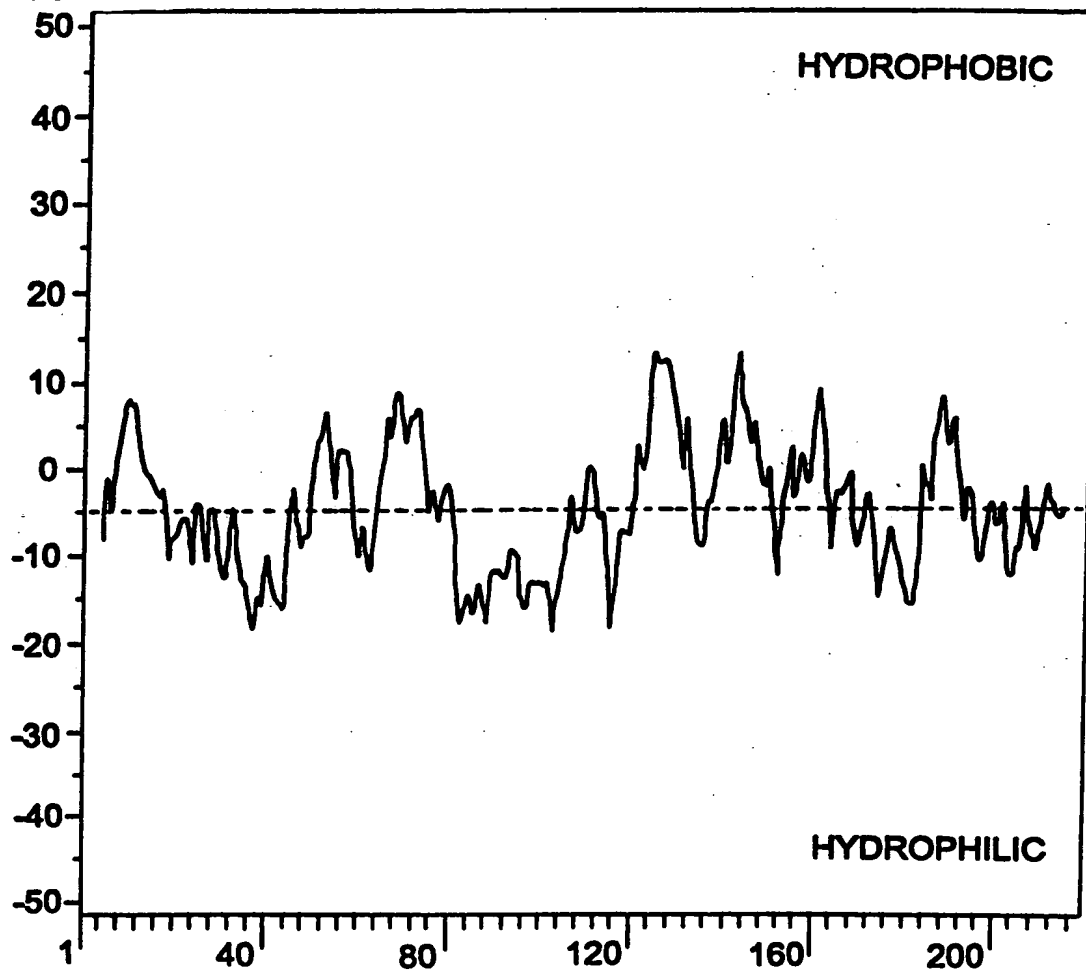
Inventor(s): Rao *et al.*

Application N : 09/478,598

Attorney Dkt No: 5718-16A (35718/193734)

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM30.
TOTAL NUMBER OF AMINO ACIDS IS: 218.



HYDROPATHIC INDEX OF VSPM30 FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-5.31).

FIG. 3D.

COLONY LIFT ASSAY TO DETECT PROTEIN-PROTEIN INTERACTIONS

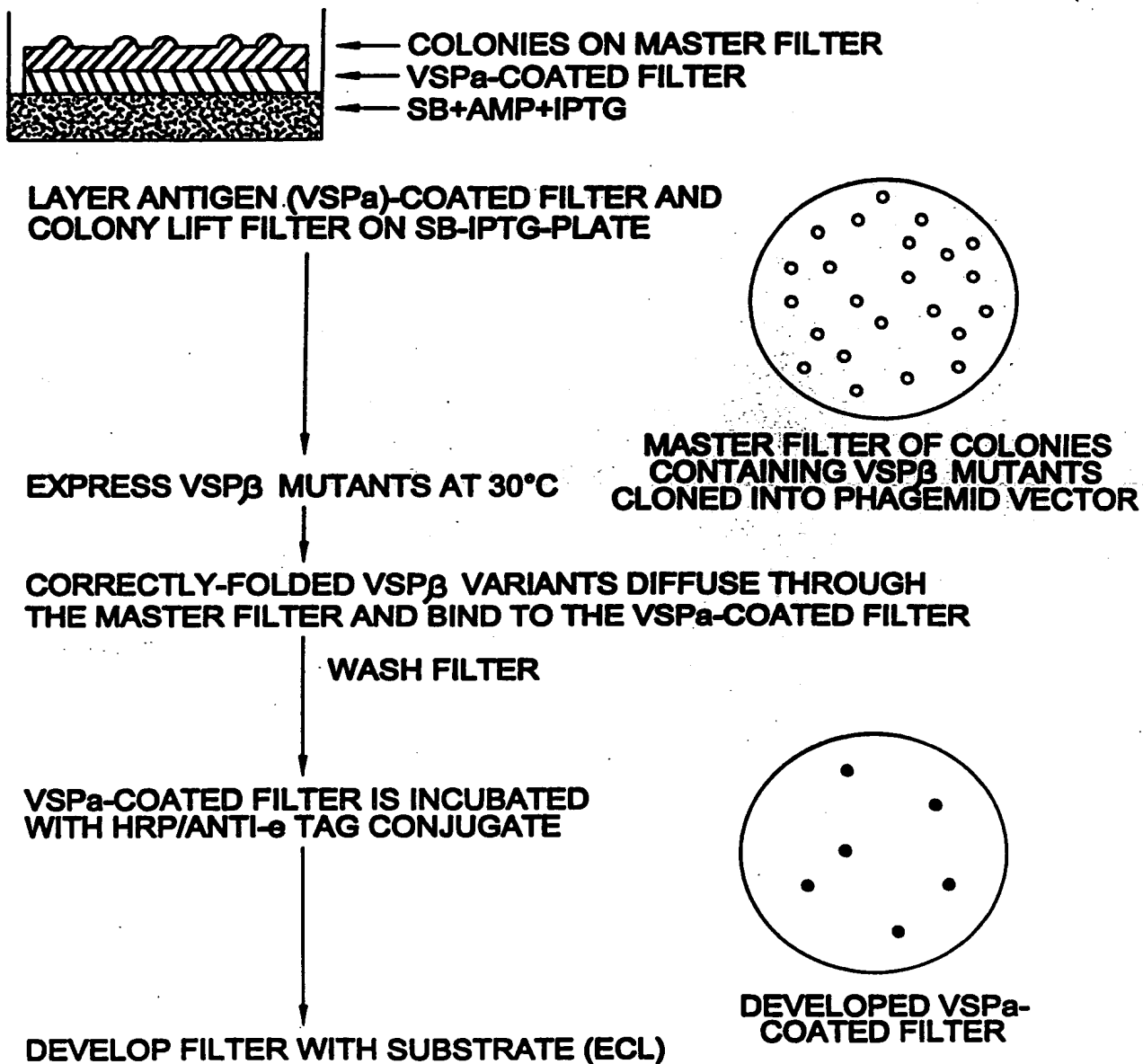


FIG. 5.